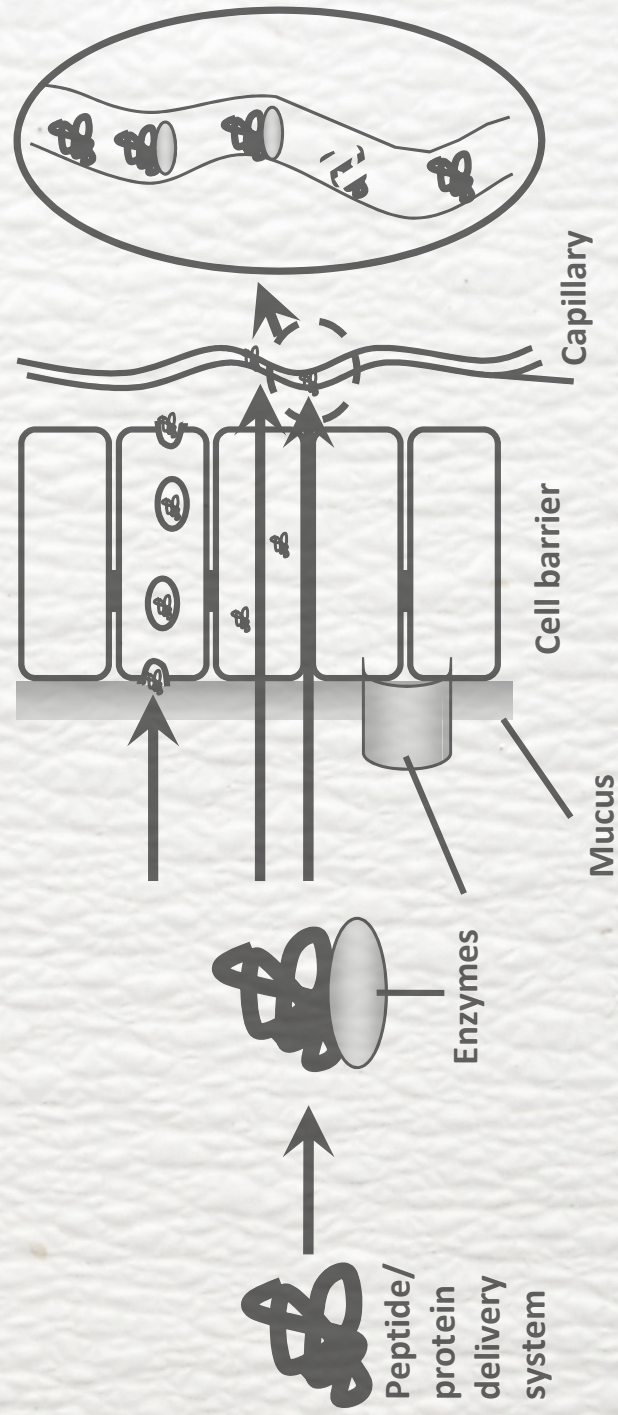


# MINISYMPOSIUM

## 4 FEBRUARY 2011

### 14:00 HALL B



## Delivery of peptides and proteins

**Hanne Mørck Nielsen**

*Biomacromolecular Drug Delivery*

*University of Copenhagen, Denmark*

Peptide and protein drugs are extremely potent drugs once their target is reached. However, overcoming the biological membrane barriers represent a major challenge for advancing the numerous new peptide and protein drug candidates into treatment modalities. The size and the hydrophilic nature of these therapeutic biomacromolecules significantly limit their permeation into and across biological membranes eventually resulting in a low bioavailability. To overcome the biological barriers represented for e.g. mucosal delivery, several formulation approaches are made, such as preparation of particulate mucoadhesive systems encapsulating the drug. Also, more targeted delivery of peptide drugs is made making use of conjugation of carrier molecules of peptidic or lipophilic nature. In the presentation, focus will be on the use of membrane interacting peptides and lipids as carriers and how this may improve the delivery into and across the biological barriers.

# AGENDA

*the event starts at 14:00  
and takes place in lecture hall B, Kemencentrum*

## Delivery of peptides and proteins

**Hanne Mørck Nielsen**

*Department of Pharmaceutics and Analytical chemistry,  
University of Copenhagen, Denmark*

## Coffee break

## Nucleic acids as drugs and drug targets

**Sofi Elmroth**

*CMPS, Lund University, Sweden*

## Enzymology of hemicellulose modification for biomaterial applications

**Henrik Stålbrand**

*CMPS, Lund University, Sweden*

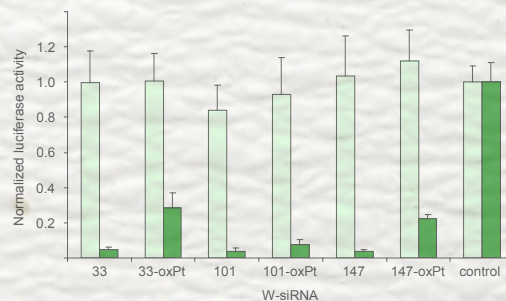
*after the talks  
pub in CMPS coffee room*

## Nucleic acids as drugs and drug targets

**Sofi Elmroth**

*CMPS, Lund University, Sweden*

Nucleic acids constitute a major intracellular target for many metal based drugs. The initial finding of cisplatin as an efficient treatment for testicular cancer has resulted in extensive research regarding interactions on the DNA level and influence on the survival of cells. Despite early findings of interactions between cisplatin and RNA, much less is known about how such interactions may influence cellular functions. From a kinetic perspective we have previously shown that metalation of RNA and DNA is likely to occur in parallel. The group of microRNAs (miRNAs) is a type of endogenous small size RNAs with influence on protein translation. Their function relies on interaction with the RNA-induced silencing complex (RISC). This machinery is also taken advantage of by the RNAi technology, i.e. during transient silencing of gene expression after addition of synthetic, double-stranded RNAs (siRNAs). A current focus for work in our laboratory is on studies of metal-based anticancer drugs and their potential influence on both si- and miRNA function. Our findings will be discussed in terms of tentative alternative RNA-interaction pathways for the metal complexes studied.



*Effect of metalation with oxaliplatin on silencing ability of siRNAs compared to the corresponding non-platinated ones as studied by a Luciferase assay.*

## Enzymology of hemicellulose modification for biomaterial applications

**Henrik Stålbrand**

*CMPS, Lund University, Sweden*

Hemicelluloses are among the worlds most abundant renewable resources. We focus on the enzymatic modification of spruce galactoglucomannan by  $\beta$ -galactosidases and  $\beta$ -mannanases directed towards new molecular structures with material, food/feed and health applications, an example being drug-delivery mannan gels (Andersson-Roos et al 2008). The double-displacement mechanism of endo- $\beta$ -mannanases is suitable for transglycosylation reactions for the synthesis of novel saccharides and conjugates. Homologous  $\beta$ -mannanases, however, show great variations in the transglycosylation capability. This is possibly due to substrate affinity differences in the active site clefts, where several subsites each bind a carbohydrate monomer. The structural-functional prerequisites for transglycosylation efficiency will be discussed in light of several mannanase 3D-structures and rational mutagenesis. In this work we demonstrate a new fast method for relative subsite affinity determination using MALDI-TOF MS analysis of 18 oxygen-labelled products (Hekmat et al 2010).

References: Andersson-Roos, Edlund, Sjöberg, Albertsson, Stalbrand, *Biomacromolecules*, 9, 2104-2110 (2008); Hekmat, Leggio, Rosengren, Kamarauskaite, Kolenova, Stalbrand, *Biochemistry*, 49, 4884-4896 (2010)

